

# PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

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To:  
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# PCT

## INVITATION TO PAY ADDITIONAL FEES

(PCT Article 17(3)(a) and Rule 40.1)

Applicant's or agent's file reference  UTFC:736WO  International application No.  PCT/US02/41015  Applicant  BOARD OF REGENTS, THE UNIVERSITY OF TEXAS SYSTEM	Date of Mailing (day/month/year)  <b>PAYMENT DUE</b>  within 15 days from the above date of mailing  International filing date (day/month/year) 19 December 2002 (19.12.2002)
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**1. This International Searching Authority**

(i) considers that there are 19 (number of) inventions claimed in the international application covered by the claims indicated below/on an extra sheet:  
Please See Continuation Sheet

and it considers that **the international application does not comply with the requirements of unity of invention** (Rules 13.1, 13.2 and 13.3) for the reasons indicated below/on an extra sheet:  
Please See Continuation Sheet

(ii) ☐ has carried out a partial international search (see Annex) ☒ will establish the international search report on those parts of the international application which relate to the invention first mentioned in claims Nos.: 1 and 2 (in part) and 3 and 4

(iii) will establish the international search report on the other parts of the international application only if, and to the extent to which, additional fees are paid.

**2. The applicant is hereby invited, within the time limit indicated above, to pay the amount indicated below:**

\$210.00	X <u>18</u>	= <u>\$3,780.00</u>
Fee additional per invention	number of additional inventions	total amount of additional fees

The applicant is informed that, according to Rule 40.2(c), **the payment of any additional fee may be made under protest**, i.e., a reasoned statement to the effect that the international application complies with the requirement of unity of invention or that the amount of the required additional fee is excessive.

3. ☐ Claim(s) Nos. \_\_\_\_\_ have been found to be unsearchable under Article 17(2)(b) because of defects under Article 17(2)(a) and therefore have not been included with any invention.

Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231  Facsimile No. (703)305-3230	Authorized officer  Maurie G. Baker  Telephone No. 703-308-1256
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International application No.  
PCT/US02/41015

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This International Search Authority has found 19 inventions claimed in the International Application covered by the claims indicated below:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group I, claim(s) 1 and 2 (in part) and 3 and 4, drawn to an engineered microparticle comprising a self-assembled monolayer.

Group II, claim(s) 1 and 2 (in part) and 5 and 6, drawn to an engineered microparticle comprising streptavidin.

Group III, claim(s) 1 and 2 (in part) and 7, drawn to an engineered microparticle comprising a dipolar material.

Group IV, claim(s) 1 and 2 (in part) and 8, drawn to an engineered microparticle comprising a doping agent.

Group V, claim(s) 1 and 2 (in part) and 9, drawn to an engineered microparticle comprising a fluorescent label.

Group VI, claim(s) 1 and 2 (in part) and 10 and 53-55, drawn to an engineered microparticle comprising a ganglioside.

Group VII, claim(s) 1 and 2 (in part) and 11 and 12, drawn to an engineered microparticle comprising a vesicle.

Group VIII, claim(s) 13-15 (in part) and 16\*\*\*, drawn to a library of engineered microparticles comprising a self-assembled monolayer.

Group IX, claim(s) 13-15 (in part) and 17 and 18\*\*\*, drawn to a library of engineered microparticles comprising streptavidin.

Group X, claim(s) 13-15 (in part) and 19\*\*\*, drawn to a library of engineered microparticles comprising a fluorescent label.

Group XI, claim(s) 13-15 (in part) and 20\*\*\*, drawn to a library of engineered microparticles comprising a ganglioside.

Group XII, claim(s) 13-15 (in part) and 21-23\*\*\*, drawn to a library of engineered microparticles comprising a vesicle.

\*\*\*Claims 24-32 will be included with Groups VIII - XII to the extent they read on the elected invention

Group XIII, claim(s) 33-35 (in part) and 36^^^, drawn to a method for forming a library of engineered microparticles, where the microparticles comprise a self-assembled monolayer.

Group XIV, claim(s) 33-35 (in part) and 37 and 38^^^, drawn to a method for forming a library of engineered microparticles, where the microparticles comprise streptavidin.

Group XV, claim(s) 33-35 (in part) and 39^^^, drawn to a method for forming a library of engineered microparticles, where the microparticles comprise a fluorescent label.

Group XVI, claim(s) 33-35 (in part) and 40^^^, drawn to a method for forming a library of engineered microparticles, where the microparticles comprise a ganglioside.

Group XVII, claim(s) 33-35 (in part) and 41 and 42^^^, drawn to a method for forming a library of engineered microparticles, where the microparticles comprise a vesicle.

^^^Claims 43-52 will be included with Groups XIII - XVII to the extent they read on the elected invention

Group XVIII, claim(s) 56-59, drawn to method for controlling the aggregation of microparticles.

Group XIX, claim(s) 60, drawn to a method for identifying one or more complexes within a sample.

1. This International Searching Authority considers that the international application does not comply with the requirements of unity of invention (Rules 13.1, 13.2 and 13.3) for the reasons indicated below:

The inventions listed as Groups I - XIX do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

PCT Rule 13.2 states that unity of invention shall be fulfilled when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features". It further defines "special technical feature" as "those technical features that define a contribution which each of the claimed inventions, claimed as a whole, makes over the prior art".

The technical feature that links the claims is the engineered microparticle ("adapted to produce a dielectric response"). These microparticles are known in the art as disclosed by HOU (U.S. 6,117,368). The reference clearly discloses synthesized dielectric

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particles (reading on the claimed "engineered microparticle") of micron size. See, e.g. Example One of the patent, especially column 6, lines 18-34. Thus the technical feature that links the claims does not avoid the prior art and the claims lack unity.

Also note that if an independent claim does not avoid the prior art, then the question whether there is still an inventive link between all the claims dependent on that claim needs to be carefully considered. If there is no link remaining, an objection of lack of unity (that is, arising only after assessment of the prior art) may be raised. Similar considerations apply in the case of a genus/species or combination/subcombination situation. Thus, the instant claims lack unity because the independent claim does not avoid the prior art and there is no link remaining between the claims to the different inventions.

Moreover, the instant international application contains multiple products and methods. See 37 CFR § 1.475 Unity of invention before the International Searching Authority, the International Preliminary Examining Authority and during the national stage, cited in part below (especially sections (c), (d) and (e)).

(a) An international and a national stage application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept (requirement of unity of invention). Where a group of inventions is claimed in an application, the requirement of unity of invention shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression "special technical features" shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art.

(b) An international or a national stage application containing claims to different categories of invention will be considered to have unity of invention if the claims are drawn only to one of the following combinations of categories:

A product and a process specially adapted for the manufacture of said product; or

A product and process of use of said product; or

A product, a process specially adapted for the manufacture of the said product, and a use of the said product; or

A process and an apparatus or means specifically designed for carrying out the said process; or

A product, a process specially adapted for the manufacture of the said product, and an apparatus or means specifically designed for carrying out the said process.

(c) If an application contains claims to more or less than one of the combinations of categories of invention set forth in paragraph (b) of this section, unity of invention might not be present.

(d) If multiple products, processes of manufacture or uses are claimed, the first invention of the category first mentioned in the claims of the application and the first recited invention of each of the other categories related thereto will be considered as the main invention in the claims, see PCT Article 17(3)(a) and § 1.476(c).

(e) The determination whether a group of inventions is so linked as to form a single general inventive concept shall be made without regard to whether the inventions are claimed in separate claims or as alternatives within a single claim.

The instant international application contains multiple products and methods, where the feature that links the claims is known in the art, as set forth above. Thus, the instant claims lack unity of invention.

ACCESSION NUMBER: 2002:428790 CAPLUS  
 DOCUMENT NUMBER: 137:2704  
 TITLE: Microsystem for the dielectric and optical manipulation of **particles**  
 INVENTOR(S): Mueller, Torsten; Schnelle, Thomas; Fuhr, Guenter  
 PATENT ASSIGNEE(S): Evotec Oai Ag, Germany  
 SOURCE: PCT Int. Appl., 28 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002043870	A1	20020606	WO 2001-EP13901	20011128
W: JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
DE 10059152	A1	20020620	DE 2000-10059152	20001129
DE 10059152	C2	20030327		

PRIORITY APPLN. INFO.: DE 2000-10059152 A 20001129  
 REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

TI Microsystem for the dielectric and optical manipulation of **particles**  
 IT Cell  
 (biol.; microsystem for dielec. and optical manipulation of **particles** esp. for biochem. anal. and research)

IT **Combinatorial** chemistry  
 Cooling apparatus  
 Drugs  
 Electrodes  
 Fluidized beds  
 Optical reflectors  
**Particles**  
 Pharmaceutical analysis  
 (microsystem for **dielec.** and optical manipulation of **particles** esp. for biochem. anal. and research)

IT DNA  
 Proteins  
 RL: ANT (Analyte); ANST (Analytical study)  
 (microsystem for dielec. and optical manipulation of **particles** esp. for biochem. anal. and research)

IT Metals, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (microsystem for dielec. and optical manipulation of **particles** esp. for biochem. anal. and research)

IT 7429-90-5, Aluminum, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 50926-11-9, Indium tin oxide  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (microsystem for dielec. and optical manipulation of **particles** esp. for biochem. anal. and research)